SPACE
Pacific

Membership Notes:

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-IN THIS ISSUE OF MEMBERSHIP NOTES-

If you have been following the month by month developments in digital satellite receivers through the pages of SatFACTS, you already are aware that the so-called "standard," MPEG-2, is voluntary and at this point in time being followed by virtually no broadcasters other than the European Bouquet (EB) on AsiaSat 2. We refer you to Coop's Comment, page 1, SatFACTS for August 15th which includes the following statement from Jeff Cohen, Director of Development for World Radio Network:

"When EB began we naively thought that, as with analogue transmissions, there would be both clear and encrypted channels, but all receivers would get the clear channels as a minimum. Now we know that will not happen."

This is the status, today. MPEG-2 is a voluntary, loosely defined "standard" with plenty of opportunity for individual broadcasters to adopt variations in the data stream system to make their own transmissions unique. At the same time, to help a broadcaster remain "unique" there are talented engineers working at receiver design labs to adapt these variations to "unique" receivers. Why would a broadcaster wish to be unique? Again, reference to SatFACTS page 1, August 15th and Jeff Cohen:

"The European Bouquet went to Star with the concept of 'clear channels' and Star politely told us 'go away'. STAR TV told us they may have to subsidise receivers (giving away or close to it the receivers) and later charging highly for the subscription cards. STAR TV told us they will not let their subsidised receivers sold in markets such as India have the capability of picking up TV channels (even radio services) except those from the Star bouquet for India. Why? Because they fear the Indian receivers (sold at near give away prices) will end up being exported and resold in other parts of the world."

Bouquet. The word no longer means a grouping of flowers. A bouquet is a collection of programme channels, they may or may not be transmitted within a single satellite transponder, but they will be operated as a "group" for sale or viewing packaging. Star TV and others are planning extensive "bouquets" each specifically designed for a specific segment of the world. Most of these world segments will be created around language groupings; a Japanese bouquet for example for Japan. Others will be grouped around geographic or political entities; India is an example (where there are five languages each spoken by 100 million or more people and hundreds of lesser languages).

Each bouquet will have its own variation of MPEG-2; each will have a purpose-designed receiver. Firms such as Pace will create these receiver variations using as a foundation the basic receiver we find in use in Australia (the DGT-400) or a later version of same.

Ideally, someone would produce a single receiver capable of accessing two or more bouquets. The present state of technology and patents makes this very unlikely in the near term. Here is why:

1) To protect their "market" within India, Star goes to Pace and asks for a MPEG-2 Indian receiver designed around some system that will prevent any other receiver manufacturer from offering a receiver that will receive the Star India broadcasts.

2) Star promises Pace the full order for all Indian receivers, but insists that they make the receiver using techniques which others cannot duplicate.

3) Pace has numerous software and hardware routines at its disposal and by selecting routines and designs for which they have patent protection, they are able to assure themselves as well as Star that this receiver will not be copyable by anyone else.

Star creates a transmission service which only their supplied (Pace) receivers can access, and Pace profits by being the sole supplier. Now repeat this same scenario for Japan, Malaysia, Indonesia, Australia .... you can see where it leads.

Now along comes Palcom, Sony, Chaparral and Winersat. In the old fashioned analogue world, everyone built a single receiver to the world analogue standard. And every broadcast, unless encrypted, was available to anyone with appropriate equipment. To go into the receiver business a firm needed only to follow "the standard." In the evolving world of MPEG-2, the standard is flexible, and every variation has patent protection. If Winersat set out to build receivers that exactly copied the Star India (Pace) units, they would find themselves in court before the first receivers arrived at the shipping dock.

A free to air MPEG-2 receiver, following the lonely example of the European Bouquet, is for the time being an aberration. What if nobody ever follows the European DVB Compliant MPEG-2 standard ... other than the European Bouquet?

If you were a receiver manufacturer, what would you do? Spend millions of dollars tooling up to produce MPEG-2 receivers for the DVB Compliant format when it is but one of many formats? Not likely. Would you attempt to "back door" the Pace units in India or Indonesia? Not for long.

There are so few MPEG-2 consumer receivers because there is no real standard. Panasat IRD520s were created for a specific market in Africa (MultiChoice) and only by accident work (after a fashion) for the European Bouquet. The Pace DGT-400 and Panasat have the same MPEG-2 heritage and the DGT-400 worked for the European Bouquet until late July when Galaxy "enhanced" the receivers through over the air addressing. Now they no longer work with the European Bouquet (see SatFACTS #24, p. 28).

Receiver manufacturers are anxiously looking for the kind of deal Pace has with Star; a variation of MPEG-2 built to service a specific national market, with the guarantee that only their receiver will go into that market (to the exclusion of all competitors). There are not many such deals around and progress in the form of new (Sanyo, Sharp, Sony et al) receivers which may happen to also work for a "neutral" service such as the European Bouquet will be slow.

As of mid-August only Pace has shown an interest in creating a special receiver just for the European Bouquet. Skandia Electronics first promised the receiver by mid-May; 90 days back. It is still not here. What they propose to supply is the receiver we now call the DGT-400 (used for Galaxy service) minus the conditional access capability. A total of 5,000 would be built and the delivery split between Skandia Electronics (Australia) and Pacific Satellite (Hong Kong).

This DVB Compliant MPEG-2 receiver is late in arrival for several reasons:

1) Galaxy, a major customer for Pace equipment, is insisting that the new receiver not be capable of working with their service. Why? Because Galaxy has a contract which promises them the "exclusive right" to distribute a receiver for their own service. If the DVB Compliant version, designed for C-band reception from the European Bouquet, happened to also work with Galaxy on Ku-band, that would void their exclusive distribution agreement and open up new sources for receiving Galaxy outside of Galaxy control. They don't like this.

Therefore to satisfy Galaxy, the new receiver must somehow be "hobbled" to not work in Australia on the Galaxy service.

2) Irdeto, a second firm that holds certain patent rights for the software routine which Galaxy utilises has licensed Pace to install "programme authorisation" circuits into the DGT-400. Irdeto has a contract of its own with Galaxy, relating to the authorisation process, and it insists that any new Pace receiver shipped into Australia for European Bouquet reception use not violate the agreements between Galaxy and Irdeto, or, Irdeto and Pace.

The programme authorisation system is packed in two separate parts; a portion is included on the main circuit board within the standard Pace MPEG processing circuits; another portion is housed in a second container known as the "Conditional Access Module." Iredeto, quite separate from Pace, wants to be able to license its patented programme authorisation system to other receiver suppliers and other programmers for new segments of the world. To be able to promise receiver manufacturer Thomson that no Pace receivers manufactured for any world part will accidentally work in say Indonesia, Irdeto has to take steps to protect itself from misuse of the programme access circuitry. Irdeto will never allow Pace to ship a "DVB Compliant MPEG-2" receiver to Skandia and Pacific if that receiver can work (or be field modified to work) using the Irdeto programme access system.

Early in August Pace was suggesting to Irdeto that they "block" the conditional access module "slot" on the receiver as a way of ensuring the receiver could not be field fitted with a module for Galaxy (or other conditional access controlled) service. Irdeto, in turn, was saying "*That is not good enough - you must do more than simply block the module slot*" to gain the approval of Irdeto. From the Irdeto perspective, the money it might earn through sub-licensing of patent rights for a relatively small quantity of receivers (5,000) is not worth the risk they run by angering other potential licensees such as Thomson.

SI versus CA

MPEG-2 has two distinct levels of "viewer control." Galaxy utilises both levels; NBC (on PAS-2), Star TV (on As2), European Bouquet (As2) use one.

Level one is the matching of the receiver's System Information (SI) processing "chip" with the broadcaster's SI data stream. If every broadcaster adopted the DVB Compliant MPEG-2 format as the European Bouquet has done, we would have "free to air" digital TV. The System Information data stream is like a giant slot machine with 8 separate wheels. Each wheel turns independently when the handle is pulled (i.e., the receiver is turned on) and each wheel has between 1 and 65,535 possible numbers it can stop at after the handle is pulled. Unlike the slot machine, you are not hoping to get 8 cherries all in a line when the 8 wheels stop rotating. It is more complex than that.

The broadcaster selects a number between 1 and 65,535 for each wheel. He transmits a number for each wheel and your receiver must internally match and mate each of these separate 8 number sets before you will have even "free to air" digital TV reception. Your receiver is basically pre-programmed by the factory with an assigned number for each of the 8 wheels.

If the broadcaster wishes to turn off receivers, he only has to change one number in the 8 number set. Now all of the receivers that were factory programmed to receive say 23,466 on wheel 5 will not recognise 23,467 when it is transmitted in the wheel 5 position. Result? The reception stops.

The MPEG-2 "standard" allows the broadcaster to set his 8 wheel numbers as he wishes. When he selects numbers that only he knows about, and only a handful of receivers are equipped to respond to those numbers, he shuts out reception for every other digital receiver out there.

All of this is within the "spirit" of DVB Compliant. The Scientific Atlanta PowerVu system on PAS-2 and PAS-4 insists it is "DVB Compliant" because they claim they are simply selecting numbers within the range from 1 to 65,535 for each of the 8 wheels.

If the broadcasters individually select their own numbers, and then share these numbers only with the receiver supplier they favour for their particular brand of bouquet (such as Star TV in India), they have pretty effectively shut out anyone else from participating in their service.

This may sound like "conditional access" to you. It is not; this is the unfortunate way that MPEG-2 is developing. We are not even to the conditional access level of security yet!

Level two is conditional access. It is to MPEG-2 what B-MAC is to analogue transmission; encryption of the transmission on top of the level one System Information system. Galaxy employs level one to limit reception to its own set of 8 number sets, and then on top of level one security it adds level two conditional access; scrambling of the modulation data stream. Level one ensures that only their own approved receivers can access the data stream while level two allows them to programme channel by programme channel decide which receiver gains access to each programme channel. The Japanese Perfect TV! system carries the Galaxy software one step further by making all channels on offer available on a channel by channel basis (i.e., with a specific charge for each channel per month); see SatFACTS #24, p. 18.

Level 2 requires a special circuit inside of the receiver (called Conditional Access Module or CAM), and usually also requires a "Smart Card" provided by the programmer to the viewer. The Smart Card is a miniature "circuit completion" device the size and shape of a credit card. Inside of the Smart Card are electronic circuits which function in a manner similar to a telephone toll card. The Smart Card is preloaded at the time of sale or recharging by an authorised service centre with "credits." The credits are specific to each card, and may be "dated" (i.e., good only for a particular period of time such as the month of September).

First you purchase the correct receiver (one that will function for the service package you wish to view), then you equip the receiver with a CAM (if it is not part of the initial equipment). Finally, you go into the market place to purchase the correct Smart Card which will insert into your receiver and complete the authorisation circuit. All of this done, you are finally ready to enjoy satellite TV! But only for as long as your Smart Card "credits" are paid and current.

All of this turns your television set / satellite system into a "money machine" for the programmer. By using credit card and direct debit payment routines, the programmer has your money in hand before you even begin to enjoy the services you have ordered. And now, perhaps, you can better understand why Star TV, politely, told World Radio Network and other free to air broadcasters to "*go away*" when Star was planning the system. Free to air channels simply did not fit into their business plan.

D9223 Break Through?

SatFACTS #22, 23 and 24 report in some detail that the Scientific-Atlanta D9223 PowerVu format receiver will not work on free to air services such as the European Bouquet. This remains true although there has been a small, perhaps accidental break through in this area. SPACE member and SPRSCS lecturer Robin Colquhoun (Auckland, NZ) has been able to manage some free-to-air MPEG-2 reception with a D9223 he sent to the S-A Sydney office for a software change. In our view neither the quality nor consistency of the FTA reception is worthy of your attention at this time, and S-A is treating this "project" with their usual lack of candor. Colquhoun is more optimistic than SPACE that S-A is capable of routinely modifying their D9223 software to allow hassle-free access to the European Bouquet (plus the presently FTA NBC services on PAS-2). We will advise you further in SatFACTS or here when we feel comfortable with the results. At the present time we believe the results are "one-off" and not ready for wider use.

New Zealand Members: Sky To Satellite

Overt the air (UHF band) encrypted pay TV provider Sky Network plans to launch a multiple channel Ku band satellite delivery package sometime in 1997. SatFACTS #24 reports the service may be on PAS-2. It could also be on Optus using a New Zealand boresight beam or it may start on PAS-2 and end up on PAS-8 early in 1998.

Sky executives insist the use of satellite is only for the purpose of connecting their Auckland studios to their nearly 150 UHF TV transmitters spread throughout New Zealand. Presently they interconnect using a combination of Telecom NZ fibre optic lines and point to point microwave. Their contract for this terrestrial connection expires early in 1997.

In fact, Sky plans to deliver an initial 10 programme channels to New Zealand homes via satellite using a single Ku transponder with plans to grow to 20 (2 transponders). Neither the satellite nor the MPEG-2 supplier has yet been chosen. Thomson, however, presently the supplier of the analogue

Videocrypt equipment, is a likely supplier of both the encoder-multiplexer and the receivers. Thomson is building a facility in Indonesia at this time to manufacture MPEG-2 (Thomson format) IRDs for the Indovision S-band service scheduled to become operational in 1997.

Members with a special interest in this development are urged to see Coop's Technology Digest for August 23.

Mark Long Certification Course

Three pages are enclosed with this Member Notes detailing the SPACE sponsored Mark Long Home Certification Course. One page explains the course proper, a second page is a sign-up form for the course, and a third page offers the SPACE Pacific Technical Certification Course Textbook as a stand-alone item.

Those who purchase only the Textbook (i.e., do not sign up for the course proper) will also receive from Mark Long with the Textbook a special discount certificate with a value of US$75. The purpose of the certificate is to give member Textbook buyers six additional months to sign up for the complete course and receive a US$75 discount from the course. This amounts to a trial on your part: The Textbook is a part of the Home Certification Course and you can put it to immediate use while pondering whether you will benefit from the full course.

Please note that course registrants pay course charges in two equal payments; 50% at the time of order and the balance of 50% 60 days later. The sign-up form gives you several options including charging on VISA both payments.

All materials are shipped to you directly by Mark Long and students will be in direct contact with tutor Long throughout the course.

Finally, **if** there are 15 or more students interested in taking the full course in two (busy) days during the 1997 SPACE SPRSCS show in January, you may register for this Mark Long led course by writing on your registration form (page 15 here) "*I will take the course during SPRSCS '97.*" Those signing up for this version (to be held January 21 and 22, 1997) will receive special instructions and be pre-registered for the 1997 show in a special classification..

SPRSCS '97 - The Essential Facts

√ January 23-25 (1997)
► January 21-22: Mark Long Certification Course
√ Venue: University of Auckland Tamaki Campus, Auckland, NZ
√ Invitations: To members and member firms mid September

August 1996 SPACE Pacific Programming Sources Update

Programmer	Bird/IF	DTH	SM ATV	CA TV	Contact	Telco	Fax
ABN	PAS2/1002 Vt	Yes	Yes	Yes	Mr. Selwyn Cathcart	64-6-356-2749	64-6-355-2141
Bloomberg Financial	PAS2/1249 Hz	No	No	Yes	Unknown		
CCTV	PAS2/1434 Hz	FTA /2A	Yes	Yes	Mr. John Lynam	64-6-878-9081	64-6-878-5944
CMT	PAS2/1249 Hz	Yes	Yes	Yes	Mr. Ken Clark	64-9-426-0481	64-9-426-0581
CNNI	PAS2/1183 Hz	FTA	Yes	Yes	Ms. Yvette Jollye	61-2-9900-3111	61-2-9957-5472
CTN	-See ABN-	Yes	Yes	Yes	-See ABN-		
Deutsche Welle	As2/1150Hz	FTA /2	Yes	Yes	Mr. Johannes Firsbach	49-221-389-2731	49-221-389-2777
Discovery (5)	PAS2/13XX Hz	No	No	Yes	Mr. John Fellet	64-9-579-9999	64-9-579-0910
ESPN	C2/1050Vt	Yes (5)	No	No	(5)		
Filipino Channel (6)	PAS2/1060 Hz	Yes	Yes	Yes	Ms. Patricia Daza	63-2-921-3759	63-2-924-2732
HBO Asia (5)	As2/1150Hz	Yes (5)	No	No	(5)		
MCM Paris	As2/1150Hz	FTA /2	Yes	Yes	See DW above		
MTV Asia	PAS2/1346 Vt	No	Yes/ 4	No	Mr. Michael Fleck	61-2-9977-0188	61-2-9977-0934
NBC/CNBC	PAS2/1002 VT	No	Yes	Yes	Ms Emma Fung	852-2965-6585	852-2965-6558
NHK Japan	PAS2/1115 Hz	FTA	Yes/ 1	Yes/ 1	Mr Yuichi Akatsu	81-3-5478-3369	81-3-3481-1803
RAI 1 Italy	As2/1150Hz	FTA /2	Yes	Yes	See DW above		
RTVE Spain	As2/1150Hz	FTA /2	Yes	Yes	See DW above		
TNT/Cartoon (5)	PAS2/1218 Vt	No	Yes	Yes	See CNNI above		
TV5/Paris	As2/1150Hz	FTA /2	Yes	Yes	Mr. Jim Hodgetts	33-1-44-18-5571	33-1-44-18-0655
TVC/The Value Ch.	PAS2/970Vt	FTA	Yes/ 3	Yes/ 3	Mr. George Frame	61-2-513-8000	61-2-513-8100

1/ NHK is FTA in analogue NTSC but requires contracts for use by SMATV and CATV systems. **2/** DW and other EBB package services are in MPEG-2 format requiring suitable digital receiver. Transmissions are FTA digital but require contracts for SMATV and CATV use. 2A/CCTV feeds are S-A PowerVu format but FTA. **3/** TVC pays cable and SMATV operators to carry their signal. **4/** MTV Asia only available to qualifying hotels. **5/** ESPN, TNT, HBO, Discovery available Palapa C2 in "grey market." **6/** Filipino requires unique receiver.

Programming Services With Copyright Problems

Several programming services are available on the "grey market" which means the decoders and the annual programme subscriptions are being sold outside of the geographic territories where they are authorised to be sold. "Authorised" service is supposed to be limited to the following countries and territories: Bangladesh, Brunei, Indonesia, Papua New Guinea, (The) Philippines, Taiwan, Thailand, and Singapore. In fact the CDE-2000 decoder (see SatFACTS #21, p. 6) and the companion annual subscription packages are being sold beyond these countries, largely be satellite TV dealers located in Queensland, Northern Territory, Solomon Islands and New Caledonia. Service is via the Palapa C2 satellite which provides varying levels of service throughout Australia, New Zealand and the Pacific Islands. Users in Queensland, NT, NSW report usable service on HBO Asia, TNT/Cartoon Channel, Discovery and ESPN; in Victoria ESPN or Discovery may not be usable depending upon dish size. In south central and Western Australia, none of the services are usable. In the New Caledonia region HBO, TNT and Discovery are useful on 3m range dishes. Further north in the Solomons, HBO and ESPN are not usable even on 4m size dishes. In New Zealand, only HBO and TNT/Cartoons are usable.

Within the "authorised countries" the CDE-2000 decoder sells typically for US$310 and the full year programme subscription for the four channels sells for US$264. Convert that to your local currency and then determine the "premium price" you may be asked to pay for the privilege of having these services through a "grey market" outlet. An additional concern is how you will renew the programme subscription at the end of 12 months; you probably don't want to be purchasing another new CDE-2000 plus subscription on an annual basis.

The long term future of these package of four channels is by no means certain. A competitive system backed by Hong Kong Based Star TV is scheduled to begin operations for Indonesia in October using digital delivery techniques on Palapa C2. Unfortunately for the area south of the equator, the transponders selected for this new digital service are beamed to the north into Asia proper (see SatFACTS #24, p. 2). Use of these C2 transponders is only short term and the entire service will move to the new Indostar "S" band satellite (see SatFACTS #21, p. 7) sometime in 1997. What the four channel service featuring HBO Asia et al will do as a result of this new competition is conjecture but their long term use of the present B-MAC encryption system (and the CDE-2000 decoder) is unlikely.

The "degree of illegality" in subscribing to this service beyond the countries/territories where it is "authorised" depends totally upon the laws in your country of domicile. In the very best case, it will be a violation of the civil contract terms between the service provider and the original buyer of the CDE-2000 unit. In the worst case there may be criminal penalties as well.

AFRTS (presently I177E) is another service for which there is no "legal" authorisation. Unlike the four Palapa services described above, the (American armed forces) AFRTS transmissions are never authorised outside of the US diplomatic and military world. The service utilises analogue NTSC B-MAC encryption identical in technical format to that used by ESPN, MTV Asia, TNT/Cartoons et al on PAS-2. The service went "encrypted" in the mid 1980s in response to complaints from countries around the world who saw it as an "invasion" of their sovereign rights to limit television reception to programming created within each country, and to protect the copyright of the various US programme sources which provide material to AFRTS.

The B-MAC encryption system was first violated by "hackers" in Europe where a special AFRTS (AFN) feed exists for US personnel in the eastern Mediterranean. Advertisements routinely now appear in numerous widely read European satellite and electronic publications offering AFRTS reception to anyone willing to part with (typically) US$3,500. The hacked version employs a genuine S-A 9708 IRD or a standalone B-MAC decoder (model 9700) which has been software altered to allow the user to monthly input new "authorisation keys." The keys are provided as a part of the "service" by the firm supplying the hacked unit.

Nothing about this is legal under US law. In other countries, local copyright protection legislation would apply and establish the degree of "illegality" involved. In the absence of specific legislation, such as is the case in many Pacific island nations and in some Asian countries, there is no illegal act. However, the buyer is always at risk being dependent upon the hacked equipment source for monthly "key" updates, and AFRTS may change to digital shortly.

MORE: Programming Services With Copyright Problems

Star TV's single channel analogue service, available from Palapa C2 (4180RF/970IFVt) consists presently of a mixture of programming taken from Star's "V" channel (music) service, their sport service, their Star Plus general entertainment service and an evening (Indonesian time) movie period. The PAL format service is FTA for all but the movie portion.

Star encrypts the movie portion using a Videocrypt format but operates it "open key" (i.e., accessing the movie does not require a "Smart Card" with paid subscription, only a receiver equipped with the Videocrypt decoder). For this reason access to this channel requires only the purchase of a suitable (Pace model) Videocrypt decoder equipped satellite receiver. With the correct decoder equipped receiver, the service is "transparent" to the Videocrypt encoding.

Star encrypts the movie portion for two reasons: To protect its movie agreements with the movie sources (having paid only for copyright clearance in Indonesia), and, to prepare Indonesia (the country) for the late 1996 / early 1997 launch of a new, multiple channel Star supported all digital Indovision service package. The single channel service on Palapa C2 is operated as a "billboard" to announce the arrival of the considerably larger, more complex, and available only on subscription service coming.

Within the coverage limitations of C2, this service is available to non-Indonesian viewers. Major segments of Australia (minus primarily western regions and Tasmania) have access to this service and a sizeable quantity of the Pace Videocrypt receivers are sold to viewers there. Because the Pace receiver is basically an FTA plus Videocrypt equipped IRD, the same receiver is also used to receive the dozens of normal FTA services found on Palapa and other satellites visible in Australia. The receiver comes out of the box ready to operate on the Star Videocrypt service and no registration, subscription or other fees are required.

There are two concerns here: Star may well elect to terminate this FTA service when it begins the new all digital multiple channel service; or, it could reprogram the channel as a "barker channel" directing viewers to a subscription centre for the all digital service. Or, Star could elect to upgrade the present level of Videocrypt to require the addition of a "Smart Card" subscription for continued service on this channel.

For the time being, the channel is available, it is operated as an FTA service 24 hours per day provided you have the correct version of Pace IRD, and the difference in cost between the Videocrypt capable Pace receiver and a similar function receiver without this feature is small (typically under A$100).

Several Palapa C2 services employ "occasional encryption" primarily during transmission of programming sourced from the USA. You will see this video-only encryption appearing on Filipino GMA, Malaysian RTM and TV3 or a daily basis; less frequently on others. These are "closed circuit" encryption systems put into operation to satisfy programming use agreements (i.e., copyright). To date there has been no known attempts to "hack" these services when encrypted and anyone dealing in such hardware (if it existed) would be subject to the same penalties as would apply to (for example) dealing in hacked AFRTS B-MAC IRD or decoder units within the country where the activity is taking place.

NBC Asia has a unique problem relating to copyright. Their primary programming source is NBC-USA and various prior sale agreements exist between NBC-USA and many Pacific/Asian broadcasters for specific programmes. For this reason the NBC-Asia schedule has segments each day which have not been copyright-cleared for satellite viewer use in countries such as New Zealand and Australia. Over time this agreements will expire and programmes now restricted for use in countries such as New Zealand will become available there. At the present time NBC-Asia utilises an "Open Key" (non-conditional access) variant of MPEG-2. Anyone equipped with a Pace DVR-500 or Panasat IRD520 digital receiver can access any of the 7 programme channels transmitted, regardless of location. At some future date NBC will supply conditional access modules (CA devices) to all authorised receivers and through the CA addressing system receivers located where certain programmes are not cleared will find those programmes eliminated from the reception package.

CABLE TV and SMATV ONLY SOURCES

Commercial contracts for use of programming intended primarily for cable and satellite master antenna (SMATV) systems are possible for some of the services which at this point in time refuse to accept DTH (direct to home) subscriptions. Members are advised that in countries where pre-existing affiliate agreements exist (example: ESPN through Sky in New Zealand) there is no point in wasting your time contacting the programmer. Where exclusive contracts pre-exist, you cannot negotiate use rights even if the existing rights holder operates in a region far removed from your cable/SMATV location.

Source	Bird/IF	SMATV	CATV	Rates	Contact	Telco	Fax
ABN	PAS2/ 1002Vt	Yes	Yes	<U$.30 p/m	Chris Wanden, Faro. Mohamed	65-323-0488	65-323-0788
CMT	PAS2/ 1249Hz	Yes	Yes	<U$.50 p/m	Ms. Carolyn Gossman	(USA)203-965-6000	(USA)203-965-6315
CNNI	PAS2/ 1183Hz	Yes	Yes	<U$1.00 p/m	Ms. Yvette Jollye	61-2-9900-3111	61-2-9957-5472
Discovery	PAS2/ (digital)	No	Yes 1	<U$1.00 p/m	Mr. Mark Lay	65-548-0588	65-548-0598
ESPN	PAS2/ 1288Vt	Yes 2	Yes 2	Negotiable	Mr. Alexander Brown	852-2887-1199	852-2887-0813
MTV Asia	PAS2/ 1346Vt	Yes 3	No	<U$.50 p/m	Mr. Michael Fleck	61-2-9977-0188	61-2-9977-094
CNBC/ NBC Asia	PAS2/ 1057Hz	Yes 4	Yes 4	<U$.75 p/m (4)	Ms. Emma Fung (4)	852-2965-6585	852-2965-6558
NHK Japan	PAS2/ 1115Hz	Yes	Yes	Unknown	Mr. Yuichi Akatsu	81-3-5478-3369	81-3-3481-1803
Sky Racing	As2/ 1130Vt	Yes	Yes	(5)	Mr. Steffen Holzt	687-28-41-56	687-28-41-56
TNT/ Cartoons	PAS2/ 1218Vt	Yes	Yes	<U$1.00 p/m	Ms. Yvette Jollye	61-2-9900-3111	61-2-9957-5472
Value Channel	PAS2/ 1400Vt As2/ 1490Vt	Yes (6)	Yes (6)	(6)	Ms. Simone Messenger	61-2-513-8000	61-2-513-8100

1/ Discovery has (mid August 1996) converted from PAL B-MAC to PowerVu MPEG on PAS-2. They will affiliate with cable TV in most areas but there are pre-existing deals with pay TV operators in NZ and Australia which may restrict access. SMATV is not encouraged. **2/** ESPN has pre-existing affiliations in NZ, Australia; will deal in Pacific islands but requires sizeable annual minimum guarantees that seem to be negotiable. Don't expect an easy time with them. **3/** MTV Asia will only affiliate with hotels that have a high percentage of Mandarin speaking clients which eliminates just about every hotel outside of Asia proper. **4/** CNBC is available to hotels/motels at US$.03 per occupied room per night. NBC Asia is going through a content transition which limits its use in many countries. Where available, rate is $.06 per occupied room per night for the combination of CNBC and NBC. For facilities with 100 rooms or more, NBC pays for the DVR-500 IRD units. **5/** Australian (Sky) horse racing is switching from B-MAC to Pace MPEG on As2 before end of 1996. Individual dish owners typically pay in the range of US$2,000 per year for access. **6/** The Value Channel actually pays cable TV operators to carry their programming; a percentage of the sales inside your cable TV territory.

Sources for IRD and Decoder Equipment

IRD (integrated receiver-decoders) and decoders (stand alone decryption units that require a suitable satellite receiver to function) are available through the satellite programmers (for cable TV and SMATV, not DTH) and through authorised programme agents (for DTH and some SMATV applications). Some services, such as the HBO/Discovery/ESPN/TNT package on Palapa C2 require one format decoder for DTH, another for SMATV and CATV. Analogue decoders presently required in the Pacific are all in the (S-A) B-MAC family. There are NTSC (TNT, ESPN, MTV etc.) and PAL (HBO/Discovery/ESPN/TNT on C2) versions of B-MAC. Normally a PAL version will not process NTSC and vice versa.

MPEG digital is new to the Pacific and Asia and there is presently no established single format for transmission of MPEG-2 being followed by programmers or transmission sites. Scientific Atlanta calls their variation of MPEG-2 "PowerVu" and you can only receive a PowerVu transmission with a PowerVu version receiver (presently the D9223).

The European Bouquet (EB) of programming (consisting of German Deutsche Welle, French TV5 and MCM, Italian RAI Uno and Spanish [R]TVE) is attempting to establish a common MPEG-2 transmission format with its AsiaSat 2 transmissions. They utilise a European and world adopted format known as DVB Compliant. Unfortunately, virtually no other programmer has elected to utilise this MPEG-2 standard although this was the standard selected by the world's broadcasters.

At the present time (August 1996) programmers transmitting into Asia and the Pacific are following a course of modifying the basic MPEG-2 DVB Compliant format to their own unique requirements. Some, such as Star TV, do so for selfish commercial reasons; others, such as PanAmSat, have made a format selection based upon their perception of which of the various sub-formats of MPEG-2 they believe will ultimately become the "real" standard (having chosen the S-A PowerVu variation).

Digital receivers are presently judged by their "interoperability," a word that means "how many different variations of MPEG-2 can this receiver be made to function with?" This is a constantly changing technical area and programmers can make very small changes in the way they transmit their programmes to eliminate different receivers from receiving their transmissions. A recent example of this is the change in transmission format by Australian Galaxy which resulted in eliminating from their DGT-400 (Pace) receivers already in the field the ability to also tune in the EB package on C-band (see SatFACTS #24).

At this point in time, there is no digital receiver capable of receiving more than two or three of the various transmission formats being utilised. As more new digital programmers come into operation, each with their own self-selected format, this situation will in the short term become even more complicated.

The present situation is "not consumer friendly" and we do not forecast an improvement in the present situation in the coming 12 months.

Sources for IRD / Decoder Equipment: continued

Receiver Type	Works With	Source(s)	Notes
Panasat IRD520	AsiaSat 2: European Bouquet; PAS-2: NBC bouquet (1)	OPAC Pty Ltd, Telsat Communications, Bay Satellite TV	See SatFACTS #22 for technical review
Pace DGT-400 Enhanced	Galaxy	Galaxy (Australia)	
Pace DGT-400 **NOT** enhanced	Galaxy; AsiaSat 2: European Bouquet; PAS-2: NBC bouquet (1)	Galaxy (Australia)	See SatFACTS #24
Pace DVR500	AsiaSat 2: European Bouquet; PAS-2: NBC bouquet (1)	NBC (Hong Kong), Pacific Satellite (HK)	
NTL-3000	AsiaSat 2: European Bouquet, Star TV bouquet (3), AP TV; PAS-2: NBC bouquet (1)	Skandia Electronics Pty Ltd., OPAC Pty Ltd.	
Scientific Atlanta PowerVu	PAS-4 (various Singapore fed services), PAS-2: California, Hong Kong, Singapore uplink bouquets (2)	S-A Australia, Telsat Communications	See SatFACTS #22, 23, 24
Scientific Atlanta CDE2000	Palapa C2: HBO/TNT+/Discovery/ ESPN	Grey market sources northern Australia, Indonesia, PNG	See SatFACTS #21
S-A 9700 Hacked	I174: AFRTS	KeyNet	

1/ NBC is presently transmitted "open key" (i.e., not individually addressed to each authorised receiver) on PAS-2. This is a temporary situation; in the future NBC is to be sent using a conditional access (each receiver addressed) format. IRD520, DGT400, NTL 3000 and non-conditional-access equipped DVR500 receivers that presently receive this bouquet (7 programme channels) will lose service when conditional access is implemented.

2/ PowerVu bouquets:

a) Hong Kong: CTN News, CTN Entertainment, TVBS Hong Kong, CCTV-4, NBC Asia Mandarin, Test

b) Singapore: TCS1, TCS2 (additional coming on line)

c) California: CMT, CBS Network feeds, ABC Network feeds, ESPN-2, BBC World, Bloomberg Financial, Tests

3/ Star TV bouquet. This will eventually be sent conditional access after which the NTL3000 will no longer access the programming (the NTL3000 normally has no CA capability).

SOURCE CONTACTS

1) Bay Satellite TV Ltd. / tel 64-6-878-9081; fax 64-9-878-5944
2) Galaxy Australia / tel 61-2-325-7333; fax 61-2-325-7322
3) KeyNet (European 9700 decoders) / tel 44-385-395-758; fax 44-161-839-9897
4) OPAC Pty Ltd. /tel 61-2-584-1233; fax 61-2-584-1452
5) Pacific Satellite International Ltd. / tel 852-2898-1382; fax 852-2558-0406
6) Scientific-Atlanta (Australia) / tel 61-2-9452-3388; fax 61-2-9451-4432
7) Skandia Electronics Pty Ltd. / tel 61-3-9819-2466; fax 61-3-9819-4281
7) Telsat Communications Ltd. / tel 64-6-356-2749; fax 64-6-355-2141

UNTANGLING THE MANY VERSIONS OF S-A IRDs/DECODERS

Scientific-Atlanta is the primary supplier of analogue and digital decoder receivers (IRDs) and decoders in the Pacific, outside of the Galaxy Pace DGT-400 used by Galaxy. There are many S-A IRD and decoder models and each is designed for a specific application. This chart may help you better understand the universe of S-A units available and where each is intended for use.

IRD/Decoder Version	Used With ...	Helpful information from	Notes
Indovision CDE2000	Indovision: HBO/TNT+/ESPN/ Discovery on Palapa C2	Indovision/P.T. Amcol Graha Electronic Ind. tel 62-21-850-8182 or 61-21-850-8181	Distributed by P.T. AMCOL/Sony throughout Indonesia (CDE2000 is decoder only)
IndiaVision CDE2202	Proposed IndiaVision DTH package	unknown	Variation of CDE2000 proposed for PAS-4 DTH
SA9700	Formerly Discovery (PAS-2); still AFRTS	KeyNet (UK) tel. 44-385-395-758; fax 44-161-839-9897	Decoder only, requires suitable receiver
SA9708	ESPN (C2, ApStar 1, PAS-2, PAS-4)	Anna Chan (ESPN), tel. 852-2887-1199; fax 852-2887-0813	PAL C2, Ap1, PAS-4; NTSC PAS-2
SA9708	TNT + Cartoon (C2, Apstar 1, PAS-2)	Bryan McGuinte (Turner) tel 852-2826-4500;	PAL C2, Ap1; NTSC PAS-2
SA9708	HBO (C2, ApStar 1)	Jacelyn Kek (HBO) tel 65-288-6303; fax 65-287-2210	PAL format
SA9708	MTV Viacom (ApStar 1, PAS-2)	Bruce Ross (MTV) tel USA 212-258-8476; fax 212-258-6572	NTSC format
SA9708	Disney (ApStar 1)	Steve Schaefer (Disney) tel 65-542-2335; fax 65-542-2339	PAL format
D9222 (MPEG 1.5)	Liberty Sports (PAS-2)	Bill McKenna (Liberty) tel USA 713-661-0078; fax 713-661-5601	SA DVC Phase 2, FEC 7/8
D9223 PowerVu (MPEG 2 variant)	PanAmSat on PAS-2, PAS-4		Commercial receiver for broadcast, cable
D9225 PowerVu (MPEG 2 variant)	PanAmSat on PAS-2, PAS-4		"Economical" cable headend receiver (1)
D9232 (MPEG 1.5)	Middle Eastern Orbit service	Cyprus 357-909-5000	Consumer FTA analogue, fixed MPEG 1.5
D9233 PowerVu (MPEG 2 variant)			"Consumer version" receiver (1)
D9234 PowerVu (MPEG 2 variant)			"Business" class MPEG receiver (1)

1/ Models D9225, 9233 and D9234 are not yet available for shipment (August 1996). Model D9233 may also have nominal FTA analogue capability like D9232 presently does for Orbit service (see SatFACTS #24, p. 31).

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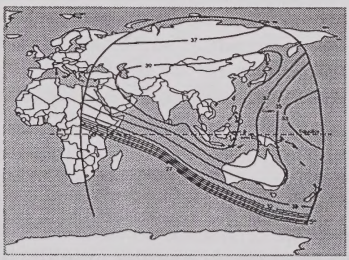

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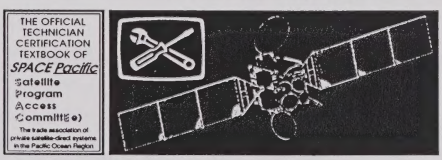

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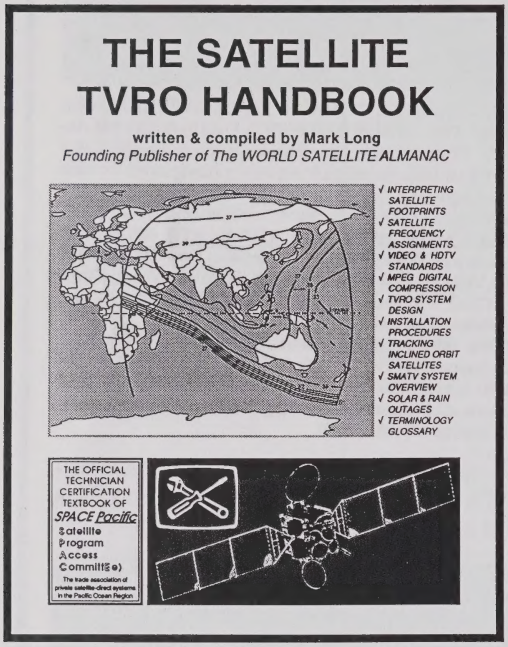

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